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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,548	01/11/2002	Jin Wook Kim	2529-000075	9928

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EXAMINER

KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 06/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/044,548

Applicant(s)

KIM, JIN WOOK

Examiner

Ramesh Krishnamurthy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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This office action is responsive to communications filed 01/11/2002.

Claims 1 – 5 are pending.

1. Figures 4 - 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art admitted to by the applicant (Figs. 4 – 7 & corresponding description in paragraphs [0002] – [0006] of the specification) in view of Friedell (US 3,620,501).

The prior art admitted to by the applicant (Figs. 4 – 7 & corresponding description in paragraphs [0002] – [0006] of the specification) discloses a pilot poppet type pressure control valve that includes a main poppet (3) that has a boundary between a high pressure chamber (H) and a back pressure chamber (B), is elastically supported by a second elastic member (4), reciprocates based on an interrelationship between a pressure of the back pressure chamber with respect to the pressure of the high pressure chamber and an elastic force of the second elastic member (4) for thereby opening and closing a discharging flow path of the high pressure chamber (H), and a

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pilot poppet (6) which is elastically supported by a first elastic member (7) in the discharging port (12) of the back pressure chamber (B), reciprocates based on an interrelationship between a pressure of the back pressure chamber and an elastic force of the first elastic member (7) for thereby opening and closing the discharging port (12) of the back pressure chamber (B) wherein the pilot poppet (6) seals the discharging port (12) of the back pressure chamber (B) by a supporting force of the first elastic member (7) when the pressure of the chamber (H) is below a set pressure level, and the discharging flow path of the chamber (H) is closed by the main poppet (3) to which the back pressure of the chamber (B) is applied, and the pilot poppet (6) opens the discharging flow path of the chamber (H) to the main poppet (3) to which the pressure of the chamber (H) is applied as the pilot poppet opens the discharging port (12) by the pressure of the chamber (H) when the pressure of chamber (H) exceeds set pressure level.

The prior art admitted to by the applicant fails to explicitly disclose a gradual increase in the diameter of the discharging port (12) in the downstream direction.

Friedell ('501) discloses a poppet type pressure relief valve (100) having a valve element (125) seating against a surface (130) whose area changes gradually in the downstream direction (Col. 4, lines 1 – 57) for the purpose of eliminating valve chattering (Col. 3, lines 1 – 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the prior art valve disclosed by the applicant (Figs. 4 – 7 & corresponding description in paragraphs [0002] – [0006] of the

specification) a discharge port (12) whose area changes gradually in the downstream direction for the purpose of eliminating valve chattering as recognized by Friedell ('501).

Regarding claim 2, it is noted (Figs. 4 - 7) that the inner surface (upstream of the valve seat) of the discharging port (12) has a circular longitudinal structure.

Regarding claim 3, it is noted (Figs. 4 - 7) that the poppet has an outer surface with a sealing portion (of the portion (6a)) whose diameter gradually increases.

Regarding claim 4, it is noted that the valve disclosed in the prior art admitted to by the applicant (Figs. 4 - 7 & corresponding description in paragraphs [0002] - [0006] of the specification) further comprises a piston (1) that reciprocates in the main poppet (3) to and fro, is elastically supported by a second elastic member (4) and opens the pilot poppet (6) together with the main poppet (3) when the piston (1) is moved by the pressure in the high pressure chamber (H).

Regarding claim 5, it is noted (Fig. 4) that the piston (1) includes an orifice (1a) formed in the interior of the piston.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Araki et al. discloses a valve apparatus having constructional features that limit vibration. Asaoka discloses a metering valve similar to the 'prior art' valve disclosed in the instant application. Machat et al. discloses a pressure control valve. Kortge discloses a pressure-actuated flow control valve. Grant discloses a valving interface for a poppet valve. Nguyen et al. discloses a pressure actuated valve assembly.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is

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(703) 305 - 5295. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mikado P. Buiz, can be reached on (703) 308 - 0871. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 - 9302 and for after-final communications, the fax phone number is (703) 872 9303.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.

Ramesh Krishnamurthy
Examiner
Art Unit 3753
May 28, 2003



Mikado P. Buiz
Supervisory Patent Examiner
US Patent & Trademark Office

5/28/03